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(43) International Publication Date 7 October 2004 (07.10.2004)

PCT

(10) International Publication Number WO 2004/086840 A3

(51) International Patent Classification⁷: 13/08

H05K 13/04,

(21) International Application Number:

PCT/IB2004/050319

- (22) International Filing Date: 23 March 2004 (23.03.2004)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 03100813.9

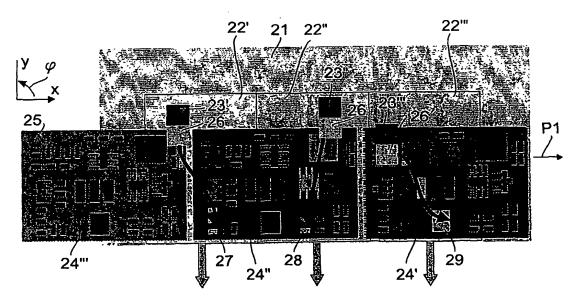
28 March 2003 (28.03.2003) H

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD OF PLACING AT LEAST ONE COMPONENT ON AT LEAST ONE SUBSTRATE AND APPARATUS THEREFORE



(57) Abstract: A method of placing at least one component (25) on at least one substrate (24), a component (25) being picked up by means of at least a placement machine (2) and placed on a desired position on the substrate (24). After the component (25) has been placed on the substrate (24), an image of the component (25) placed on the substrate (24) is made by a camera (5, 23), a difference between the real position of the component (25) on the substrate (24) and the desired position of the component (25) on the substrate (24) being established on account of the image. The positioning of a next component (25) to be placed is adapted on account of the difference found.



as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA. CH. CN. CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 10 February 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

PCT/IB2004/050319

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H05K13/04 H05K13/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{H05K} \end{array}$

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

	NTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 408 090 B1 (SALOMON WERNER ET AL) 18 June 2002 (2002-06-18) the whole document	1,4-9
A	US 4 978 224 A (KISHIMOTO SHIN ET AL) 18 December 1990 (1990-12-18) the whole document claim 1; figures 1,13,20,21	1,8
A	US 2001/055069 A1 (HUDSON EDISON T) 27 December 2001 (2001-12-27)	1,8
Α	the whole document	2,3
Α	US 4 941 256 A (CAPSON DAVID W ET AL) 17 July 1990 (1990-07-17) abstract; figure 3 claim 1; figures 1,13,20,21	1,8
	-/	

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Date of the actual completion of the international search 14 December 2004	Date of mailing of the international search report 23/12/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Lommel, A

INTERNATIONAL SEARCH REPORT

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	ion) DOCUMENTS CONSIDERED TO BE RELEVANT						
Category °	Citation of document, with Indication, where appropriate, of the relevant passages	Relevant to claim No.					
A	US 5 880 849 A (VAN DE VEN JOHANNES T A) 9 March 1999 (1999-03-09) cited in the application the whole document	1,8					
·							
		·					

INTERNATIONAL SEARCH REPORT

PCT/IB2004/050319

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6408090	B1	18-06-2002	CN WO EP JP	1320363 T 0019800 A1 1118262 A1 2002526940 T	31-10-2001 06-04-2000 25-07-2001 20-08-2002
US 4978224	Α	18-12-1990	JP JP JP JP JP	1018004 A 1018049 A 1088204 A 1161310 A 1165903 A	20-01-1989 20-01-1989 03-04-1989 26-06-1989 29-06-1989
US 2001055069	A1	27-12-2001	AU WO	4098801 A 0167831 A2	17-09-2001 13-09-2001
US 4941256	Α	17-07-1990	CA	1285661 C	02-07-1991
US 5880849	A	09-03-1999	DE DE EP WO JP	69605103 D1 69605103 T2 0809926 A1 9722238 A1 11502311 T	16-12-1999 25-05-2000 03-12-1997 19-06-1997 23-02-1999